ELECTRONICS DIVISION

LEONARDO

EWOS Meeting the Future Threat

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Focus

- Focus on the EWOS – not on the threat
- Describe EWOS in the context of Information Advantage
- Look at how EWOS must adapt for the future

What is EWOS?

Electronic Warfare Operational Support (EWOS) is the combination of tools, training, knowledge and data which, along with EW hardware, enables successful EW operations

The Importance of EWOS

- The Mission Dependent Data (MDD) produced under EWOS enables EW hardware to make sense of the environment
  - Emitter Library
  - Electronic Countermeasures (ECM)

- Incomplete or incorrect MDD can lead to mission failure or the loss of a platform and its crew

- MDD provides situational awareness and the delivery of ECM routines to the platform

EW Hardware + EWOS = Information Advantage to the War Fighter

Challenges Posed by the Evolving Threat Environment

- Congestion – we are looking for a needle in an ever expanding haystack
- Complexity – threats are becoming more difficult to detect (singularly and cooperative operation)
- Agility – threats are highly mobile, the battlespace is very fluid

Mission Dependent Data can no longer be regarded as a ‘long-life’ item – it must increase in complexity, yet respond more dynamically to the ever-evolving battlespace

EWOS and the Future Threat – Fundamental Questions

- Given the evolving threat environment, how do we:
  - Maintain or increase the Information Advantage provided to the war fighter by EWOS?
  - Grow the Information Advantage provided by EWOS from the Tactical into the Operational and Strategic domains?

Solution

- Create agile Mission Dependent Data that can be tailored mission-to-mission to ensure that platforms have the best possible performance from their EW sensors and effectors

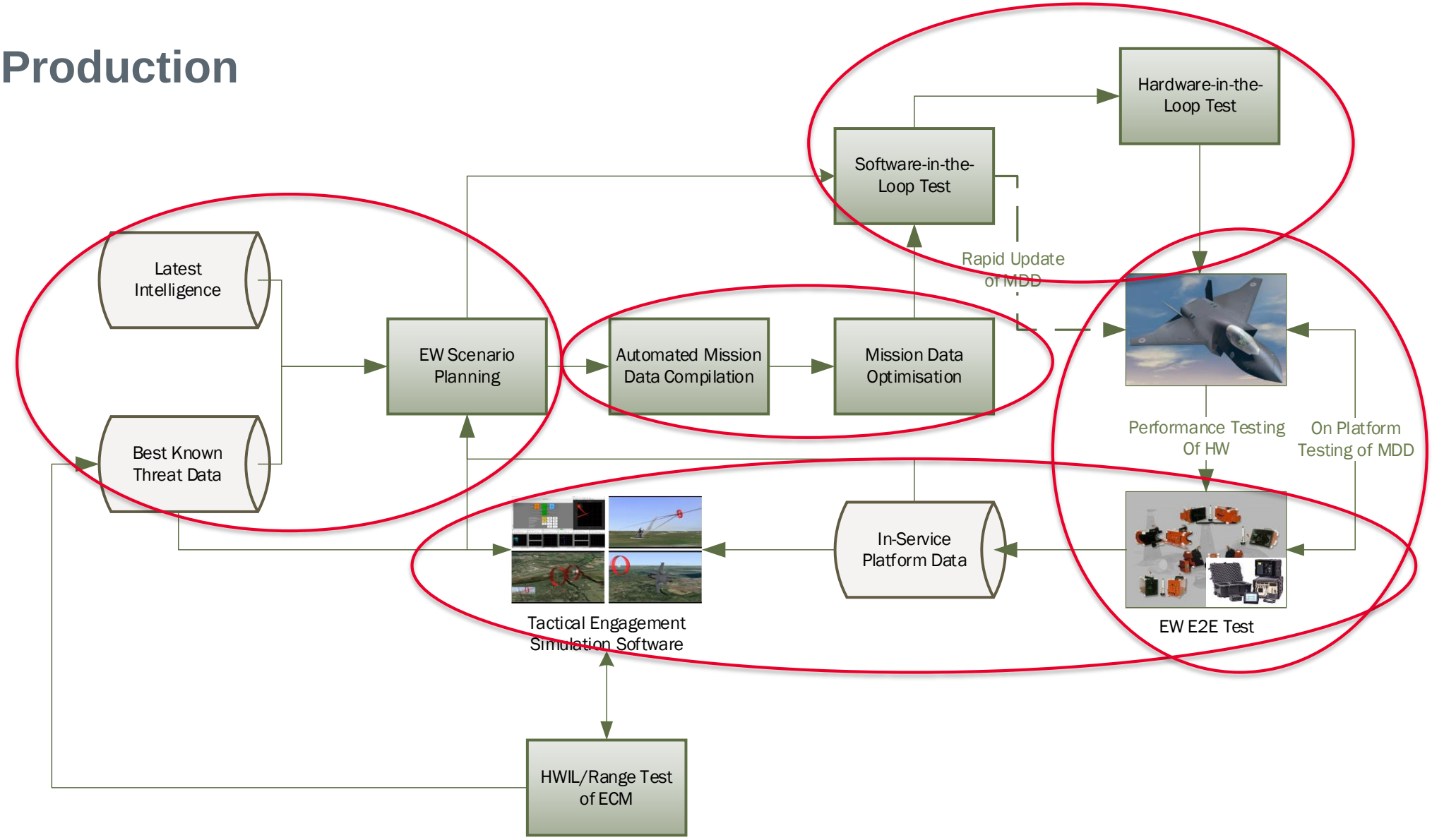
- Transform post-mission analysis from single mission analysis focussed on the performance of the Mission Dependent Data to multi-mission, multi-platform analysis that can be used to extract the maximum possible information from data recorded during missions

Analysis of Current Mission Data Cycle

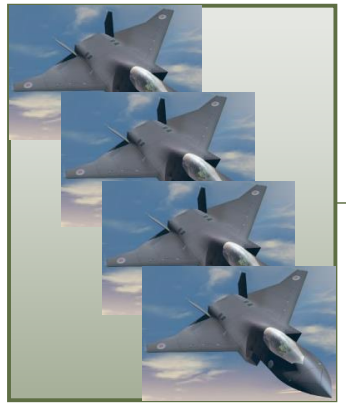
- Current mission Data Cycle is too slow
- Many manual processes
- Requirement for skilled analysts
- Human errors
- Testing wasted on identifying errors
- Limited information provided by Analysis
- Disparate processes with limited connectivity

Too Slow – Old Technology – Legacy Thinking

MDD Production



Creating Information Advantage



Data Download

Forward Data Store

Data Transfer

Rear Data Store

Multi-Platform Downloads

Automated Quick-Look Analysis

Automated In-Depth Analysis

Automated In-Depth Analysis

Big Data Analysis

Tactical

Operational

Strategic

Data Products

Mission Data Update Request

Patterns of Life

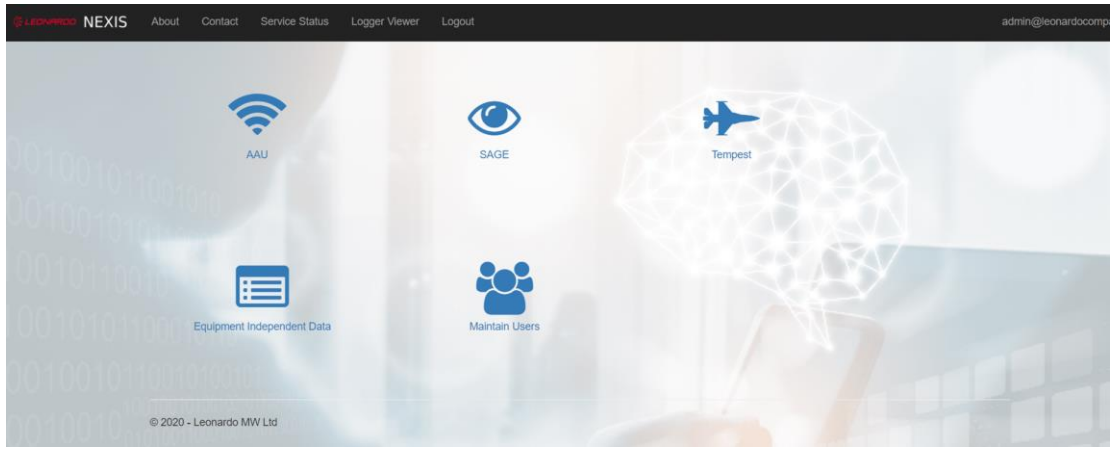
Anomaly Detection

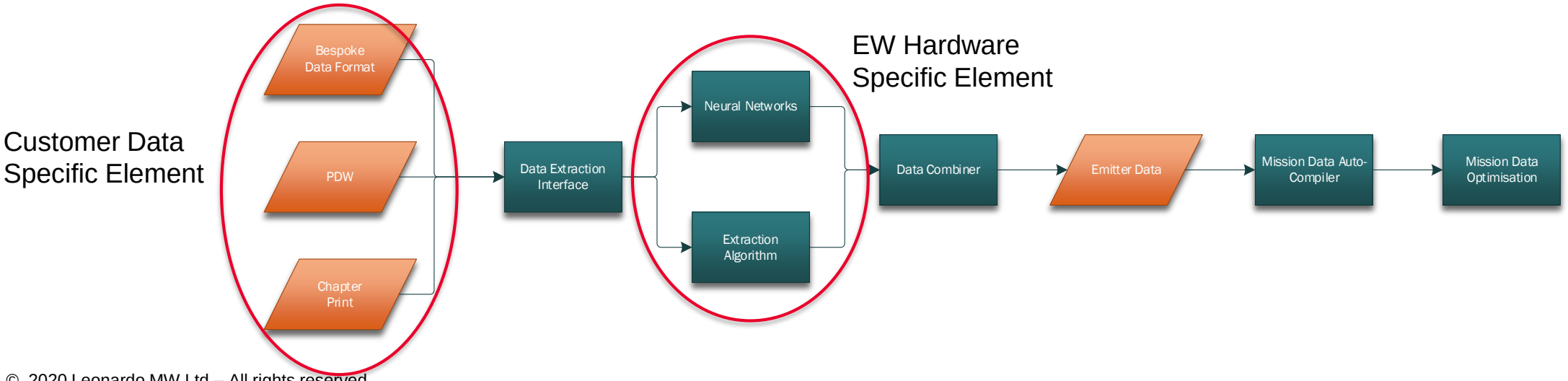
Threat Updates

Trend Analysis

Automation – Machine Learning and Neural Networks

- Aim is to replace the Human Analyst
  - Emitter Extraction
  - Identification of emitters tagged as ‘Unknown’
- Neural Networks ‘learn’ the requirements of the EW hardware
- Can reduce emitter extraction times from weeks to seconds
- Neural Networks can be used in the first stage of analysis





Summary

- Current EWOS is being left behind by the evolving threat environment
- Automation alone will not achieve the desired results
- We must use much better use of the available data, both own platform data and recorded data

THANK YOU
FOR YOUR ATTENTION

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